18. Give a detailed note on:

(a) Stork-Enamine reaction

(b) Claisen and Dieckmann condensation.

19. (a) Describe the Benzyne mechanism for aromatic nucleophilic substitution.

(b) Write note on ortho, Para and Meta directing groups.

20. Deduce the Hammett equation. Give the significance of σ and ρ. Explain the limitation, and modification of Hammett equation.

NOVEMBER/DECEMBER 2023

GCH11/DCH11 — ORGANIC CHEMISTRY – I

Time : Three hours

Maximum : 75 marks

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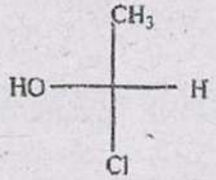
SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are Homotopic atoms?

2. Assign R/ S configuration for the following,



3. Why is 4-t-butyl cyclohexanol undergoes oxidation at a faster rate with CrO_3.

4. Predict the major product in the reduction of 4-t-butyl Cyclohexanone with $LiAlH_4$.

5. What are ambident nucleophiles?

6. How does S_{Ei} differ from S_E2 (back) reaction?

7. What will happen when pyridine is treated with $NaNH_2$ and liq NH_3?

8. How will you prepare Sym-tribromo benzene?

9. What is meant by isotope effect?

10. Define the term partial rate factor.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) State and explain cram's rule.

Or

(b) Explain various projection formulae with suitable examples.

12. (a) Discuss the conformation and stability of 1, 3-di-substituted cyclohexanes.

Or

(b) Describe conformation and reactivity of cyclohexane carboxylic acid.

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13. (a) Bring out the differences between $B_{AC}2$ and $B_{AC}1$ mechanisms of ester hydrolysis.

Or

(b) Enumerate the effect of solvent on SN_2 reaction.

14. (a) How will you synthesize 3-nitro-4-bromo benzoic acid from benzene?

Or

(b) Give the mechanism of Reimer – Tieman reaction.

15. (a) Outline any two non-kinetic methods for determining reaction mechanism.

Or

(b) Give a brief account on Taft equation.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. (a) Illustrate the optical isomerism exhibited by biphenyls.

(b) What are diastereotopic atoms and faces? Illustrate with suitable examples.

17. Briefly explain the conformation and stereochemistry of cis and trans decalin.